

Subject: MSD Colloquium, July 27, 11am, 212, A-157
From: Janice Coble <coble@anl.gov>
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MATERIALS SCIENCE DIVISION COLLOQUIUM

SPEAKER: MARIA VARELA
Oak Ridge National Laboratory

TITLE: "Interfaces Under the Microscopy:
What Can We Learn from the STEM?"

DATE: Thursday, July 27, 2006

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Axel Hoffmann

Refreshments will be served at 10:45 a.m.

Abstract: Complex oxide thin films based on ferroelectrics, high T_c superconductors (HTCS), or colossal magnetoresistant (CMR) materials are of wide interest to electronics and the emerging field of spintronics,. But epitaxial complex oxide ultrathin films and heterostructures can be significantly affected or even dominated by the presence of interfaces and may exhibit intriguing new physical properties quite different from the bulk. A study of the relations between structure and chemistry at the atomic scale is needed to understand the macroscopic properties of such "interface-controlled" materials. For this purpose, the combination of aberration corrected Z-contrast scanning transmission electron microscopy (STEM) and electron energy loss spectroscopy (EELS) represents a very powerful tool. The availability of sub- Ångström probes allows a level of unprecedented detail when analyzing not only the interface structure with sensitivity to single atoms, but also the interface chemistry. This talk will review some examples of state of the art STEM-EELS applications to the study of different oxide interfaces in perovskite heterostructures with titanates, manganites and cuprates.